

PATENT

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12/5/02IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s)	Keung, J.K. ✓	§	Examiner:	Hai Vo ✓
Serial No.:	09/666,928 ✓	§	Group Art Unit:	6748
Confirmation No.:	6748	§	Docket:	10188/2
Filed:	✓ September 21, 2000	§	Dated:	December 5, 2002
For:	✓ HEAT-SEALABLE MULTI-LAYER WHITE OPAQUE FILM	§		

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GROUP 1700

Commissioner for Patents  
Washington, DC 20231SUPPLEMENTAL SUBMISSION UNDER 37 C.F.R. §1.111(a)

Sir:

Further to the Amendment filed on November 8, 2002 in the above-captioned application, Applicants request entry of this Supplemental Submission.

Applicants present the attached Declaration of one of the inventors, Jay K. Keung under 37 C.F.R. §1.132 to show that the properties of the films of the present invention exhibit a surprisingly low Minimum Seal Temperature (MST).

The heat-sealable five-layer white opaque films claimed in the present application are suitable for packaging heat sensitive items, including frozen novelties, such as ice cream bars and ice cream sandwiches. A critical requirement for such films is that the Minimum Seal Temperature (MST) must be low enough to allow sealing without causing deterioration of the heat sensitive product being packaged.

As stated by Mr. Keung at paragraph 17 of the attached Declaration, the Minimum Seal Temperatures (MSTs) of the white, opaque WOS2 (MST=167°F) and WOW (MST=166°F) films, as claimed in pending claims 13 and 17, respectively, of the above-captioned application, U.S. Serial No. 09/666,928 are substantially lower than the MSTs of the prior art films, including the white, opaque WOS film (MST=192°F) of the prior art.

The three layer film disclosed in Comparative Example 1 of the present application is designated as WOS and was part of the prior art. The film is identical to the WOS product sold by ExxonMobil, having the following structure and composition:

- A. a top layer of Exxon<sup>®</sup> 4612 polypropylene and 4% (w/w) Millenium RCL4 TiO<sub>2</sub> as a whitening agent, wherein this layer is about 25% of the total film thickness;
- B. a cavitated core layer of Exxon<sup>®</sup> 4612 (a polypropylene polymer of high stereo regularity) and 8% (w/w) Ticona Celenese<sup>®</sup> 1300A polybutylene terephthalate (PBT) as cavitating agent;
- C. a bottom layer of polypropylene of about 8% of the total film thickness.

The following tests were done by Mr. Keung, or by persons under his direct supervision and control:

An opaque, cavitated five layer film and yielding about 28,000 sq in/lb polymer (i.e. corresponding to a total polymer thickness of about 1 mil), as in Example 2 of the present application was prepared. The film is identical to the WOS2 product sold by ExxonMobil, having the following structure and composition, as in pending claim 13:

- A. a top skin layer of polypropylene, 0.23% (w/w) SiO<sub>2</sub> in the form of Sylobloc<sup>®</sup> 45 and 0.2% (w/w) methyl acrylate antiblock agent; wherein this layer is about 2.5% of the total film thickness;
- B. a top tie layer of Exxon<sup>®</sup> 4612 polypropylene and 4% (w/w) Millenium RCL4 TiO<sub>2</sub> as a whitening agent, wherein this layer is about 15% of the total film thickness;
- C. a cavitated core layer of Exxon<sup>®</sup> 4612 (a polypropylene polymer of high stereo regularity) and 8% (w/w) Ticona Celanese<sup>®</sup> 1300A polybutylene terephthalate (PBT) as cavitating agent;
- D. a bottom tie layer of polypropylene; wherein this layer is about 15% of the total film thickness;
- E. a bottom skin layer of an ethylene-propylene-butylene (EPB) terpolymer, 0.1% (w/w) SiO<sub>2</sub> in the form of Sylobloc<sup>®</sup> 44 as antiblock agent; 0.1% (w/w) cross-linked siloxane Tospearl<sup>®</sup> T130; wherein this layer is about 4% of the total film thickness.

An opaque, cavitated five layer film and yielding about 28,000 sq in/lb polymer (i.e. corresponding to a total polymer thickness of about 1 mil), as in Example 3 of U.S. Serial No. 09/666,928 was prepared. The film is identical to the WOW product sold by ExxonMobil, having the following structure and composition, as pending in claim 17:

- A. a top skin layer of ethylene-polypropylenebutylene (EPB) terpolymer, 0.23% (w/w) SiO<sub>2</sub> in the form of Sylobloc<sup>®</sup> 45 and 0.2%(w/w) methyl acrylate antiblock agent; wherein this layer is about 2.5% of the total film thickness;

U.S. Serial No.: 09/666,928  
Filing Date: September 21, 2000  
Attorney Docket: 10188/2  
Page 4 of 7

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- B. a top tie layer of Exxon® 4612 polypropylene and 4% (w/w) Millenium RCL4 TiO2 as a whitening agent, wherein this layer is about 15% of the total film thickness;
- C. a cavitated core layer of Exxon® 4612 (a polypropylene polymer of high stereo regularity) and 8% (w/w) Ticona Celenese® 1300A polybutylene terephthalate (PBT) as cavitating agent;
- D. a bottom tie layer of polypropylene; wherein this layer is about 15% of the total film thickness;
- E. a bottom skin layer of an ethylene-propylene-butylene (EPB) terpolymer, 0.1% (w/w) SiO2 in the form of Sylobloc® 44 as antiblock agent; 0.1% (w/w) cross-linked siloxane Tospearl® T130; wherein this layer is about 4% of the total film thickness.

Exhibit 1 attached to the Declaration of Mr. Keung shows the WOS2 (White) and WOW (White) films described in above were determined to have Minimum Seal Temperatures (MSTs) of 167°F and 166°F, respectively.

A clear, uncavitated film of the five layer construction with a total polymer thickness of about 1 mil, described above for the white, opaque WOS2, but without the PBT in the core layer, was produced. This film was designated WOS2 (Clear) and its Minimum Seal Temperature (MST) was measured. Exhibit 1 shows the MST of this WOS2 (Clear) film was 184°F.

A clear, uncavitated film of the five layer construction with a total polymer thickness of about 1 mil, described above for the white, opaque WOW, but without the PBT in the core

U.S. Serial No.: 09/666,928  
Filing Date: September 21, 2000  
Attorney Docket: 10188/2  
Page 5 of 7

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layer, was produced. This film was designated WOW (Clear) and its Minimum Seal Temperature (MST) was measured. Exhibit 1 shows the MST of this WOW (Clear) film was measured as 181°F.

A clear, uncavitated film of the three layer construction with a total polymer thickness of about 1 mil, described above for the three layer white, opaque WOS, but without the PBT in the core layer, was produced. This film was designated WOS (Clear) and its Minimum Seal Temperature (MST) was measured. Exhibit 1 shows the MST of the WOS (Clear) film was 196°F.

Thus, as stated above, the Minimum Seal Temperatures (MSTs) of the white, opaque WOS2 (MST=167°F) and WOW (MST=166°F) films, as claimed in pending claims 13 and 17, respectively, are substantially lower than the MSTs of the prior art films, including the white, opaque WOS film (MST=192°F) of the prior art.

The substantially lower MSTs of the white, opaque WOS2 (MST=167°F) and WOW (MST=166°F) films, as claimed in pending claims 13 and 17, respectively, are shown to be due in large part to presence of the polybutylene terephthalate (PBT) cavitating agent in the core layer. Compare the MSTs of the uncavitated and the PBT-containing, cavitated WOS2 and WOW films - designated "Clear" WOS2 (MST=184°F) and WOW (MST=181°F) and the "White" WOS2 (MST=167°F) and WOW (MST=166°F) films, respectively, in the table shown in Exhibit 1.

U.S. Serial No.: 09/666,928  
Filing Date: September 21, 2000  
Attorney Docket: 10188/2  
Page 6 of 7

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The substantially lower MSTs of the white, opaque WOS2 and WOW films, as claimed in pending claims 13 and 17 of U.S. Serial No. 09/666,928, make these films more suitable for packaging and labeling heat sensitive products than the previously available films of the prior art, such as the WOS films described above.

In Mr. Keung's professional opinion, the substantial differences in the Minimum Seal Temperatures (MSTs) of the white, opaque WOS2 and WOW films of the invention as compared with both the white, opaque WOS films and the clear WOS films of the prior art is unexpected and surprising.

Applicants assert that the surprisingly low Minimum Seal Temperatures (MSTs) of the films of the present invention as contrasted with the (MSTs) of the films of the prior art make the claimed films particularly suitable for packaging of heat sensitive items and contributed to the commercial success of these films. (See Declaration of Robert A. Migliorini, submitted November 12, 2002).

For these and other reasons previously submitted, Applicants assert that the films of the presently claimed invention are patentably distinct from the films of the prior art.

Reconsideration of the objections and rejections issued in the Office Action of July 9, 2002 is therefore respectfully requested.

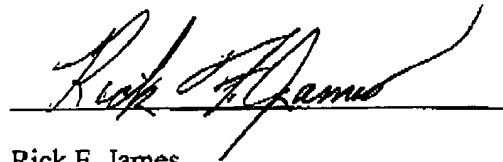
U.S. Serial No.: 09/666,928  
Filing Date: September 21, 2000  
Attorney Docket: 10188/2  
Page 7 of 7

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If resolution of any remaining issue is required prior to allowance of the application, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone provided below.

Respectfully submitted,

Date: December 5, 2002



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## EXHIBIT I

USSN: 09/666,928  
Attorney Docket: 10188/2

A. Criminal Seal Strength (lbs/lbs/ft <sup>2</sup> )		160 oF	170 oF	180 oF	190 oF	200 oF	225 oF	250 oF	275 oF	MSI oF
Film Type	Sample ID									
WOS	Clear			30.0	57.5	287.5	600.0	435.0	575.0	195.0
WOS	White			82.5	125.0	435.0	720.0	380.0	325.0	192.0
WOW	Clear			192.5	312.5		560.0	485.0	450.0	181.0
WOW	White	105.00	277.50	517.5			1025.0	425.0	675.0	166.0
WOS 2	Clear			147.5	290.0		535.0	420.0	420.0	184.0
WOS 2	White	107.50	260.00	472.5			1050.0	500.0	495.0	167.0

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